SLIDES ONLY

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LUCI Webinar FY27 Competition

Program Overview and Guidance for New Applicants

Dr. David Montgomery
S&T Foundations - Basic Research

March 5, 2026

Content

Overview: Science and Technology Foundations – Basic Research

Policy

Enabling the coordination and coherence of research opportunities and activities across DoW S&T.

Activities:

- Grants Policy
- Research Protection
- J-1 Waivers

Pipeline

Creating the future national security S&T workforce.

Activities:

- SMART Scholarship
- Joint K-12 STEM Educational Programs
- NDSEG
- Post-Secondary STEM Education and Work Force Development
  - HSRU
  - MEEP

Programs

Facilitating the BR environment to transform the future of science DoW capabilities.

Activities:

- VBFF (legacy) / BFRST / LUCI
- Pilot projects
- DEPSCoR
- BARI / International Partnerships
- Future Directions Workshops
- Defense Basic Research Annual Meeting / Defense Basic Research Forum
- MURI / DURIP (oversight)
- STTR

LUCI PROGRAM TEAM

→ Department of War, USW R&E

Dr. David Montgomery
Director of Research Programs,
S&T Foundations/Basic Research

→ Strategic Analysis, Inc.

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→ Institute for Defense Analyses

Dr. Mike Finnin (ctr.)
Scientific Advisor

LUCI BACKGROUND

PURPOSE:

The LUCI Program is an instrument to ensure that the DoD has:

- An active, long-term, and aggressive basic research portfolio in areas of strategic importance to the national security
- The ability to rapidly transition new ideas and scientific concepts towards their application in future challenges facing the Department and its mission.

Why Basic Research:

Vannevar Bush foresaw the importance of Basic Research " [Basic research is] the pacemaker of technological progress". "New products and new processes do not appear full-grown…They are founded on new principles and new conceptions, which in turn are painstakingly developed by research in the purest realms of science."

KEY OBJECTIVES:

- **Bring** the best ideas and fundamental scientific knowledge from academia into the DoD laboratories and vice-versa
- **Stimulate** innovation and creativity inside these laboratories and enhance the value of fundamental research (6.1) in the Lab ecosystem.
- **Enhance** deep Laboratory-Academia links and mutual understanding of opportunities, problems, environments, and constraints.

LUCI RESEARCH REQUIREMENTS

01 **MUST BE BASIC RESEARCH**

- The Department defines **basic research** as systematic study directed toward greater knowledge or understanding of the fundamental aspects of phenomena and/or observable facts, without specific applications toward processes or products in mind.

02 **MUST HAVE PROFOUND IMPACT**

- Can not be narrow and applicable only to a niche problem, would *potentially* **open a new field** (*ideally*)
- Address scientific areas of potential interest to the DoD

03 **MUST HAVE TECHNICAL MERIT**

- The innovation will be the key driver in developing the **technical merit** component of the proposal.
- While all the components of the LUCI proposal are evaluated and scored, the technical merit is the area on which the PI must spend the most time.

LUCI ELIGIBILITY AND DETAILS

Eligibility

- DoD government laboratory researchers
- Up to 1 PI and 1 CoPI and up to 2 Labs (could be different)
- Collaboration between different Services is encouraged but not required
- Can only be PI on one active LUCI at a time

Academic Collaborators (Eligible)

- Must be current or previous Vannevar Bush Faculty Fellows (VBFF)
- Current or previous PIs and CoPIs from the Multidisciplinary University Research Initiative

Not Eligible

Other University researchers, funded by other DoD programs, are not eligible.

Funding

Amount: $250,000/year for 3 years

Allowable Uses

- Portion of PI's salary
- Salaries of in-house contactors, new or post-doctoral researchers or other contractors
- Travel, minor equipment, and supplies
- Part-time support of graduate students or postdoctoral researchers

LUCI COLLABORATION REQUIREMENTS

Open Minds

The collaboration should **open minds** and should not just be two researchers continuing existing research paths

Involve Intellectual Exchange

Results from a serious, even deep **intellectual exchange** between the DoD lab scientist and the academic collaborator.

Are Strategic

Collaborators must achieve a common **strategy** to solve a problem.

May Accelerate Transition

May also be considered an opportunity to "**accelerate transition",** but should focus mostly on the transfer of knowledge

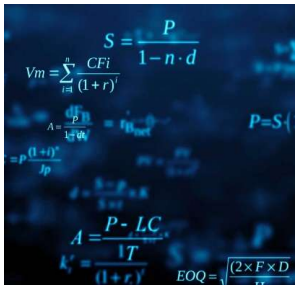
The academic collaborator can be paid with LUCI funds. We leave it to the judgement of the PI to devise a plan that is rational, well-balanced, and justified.

VBFF SCIENTIFIC RESEARCH AREAS

Quantum Information Science

Fundamentals of Bio-Engineering

Applied Mathematics and Computational Science

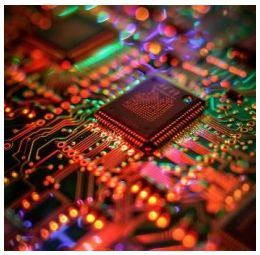


Soft Materials and Multiscale Structures

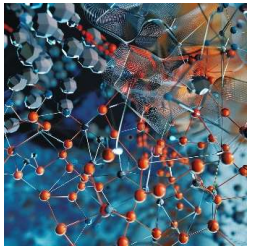
Networks/Artificial Intelligence

Neuroscience and Fundamentals of Cognition

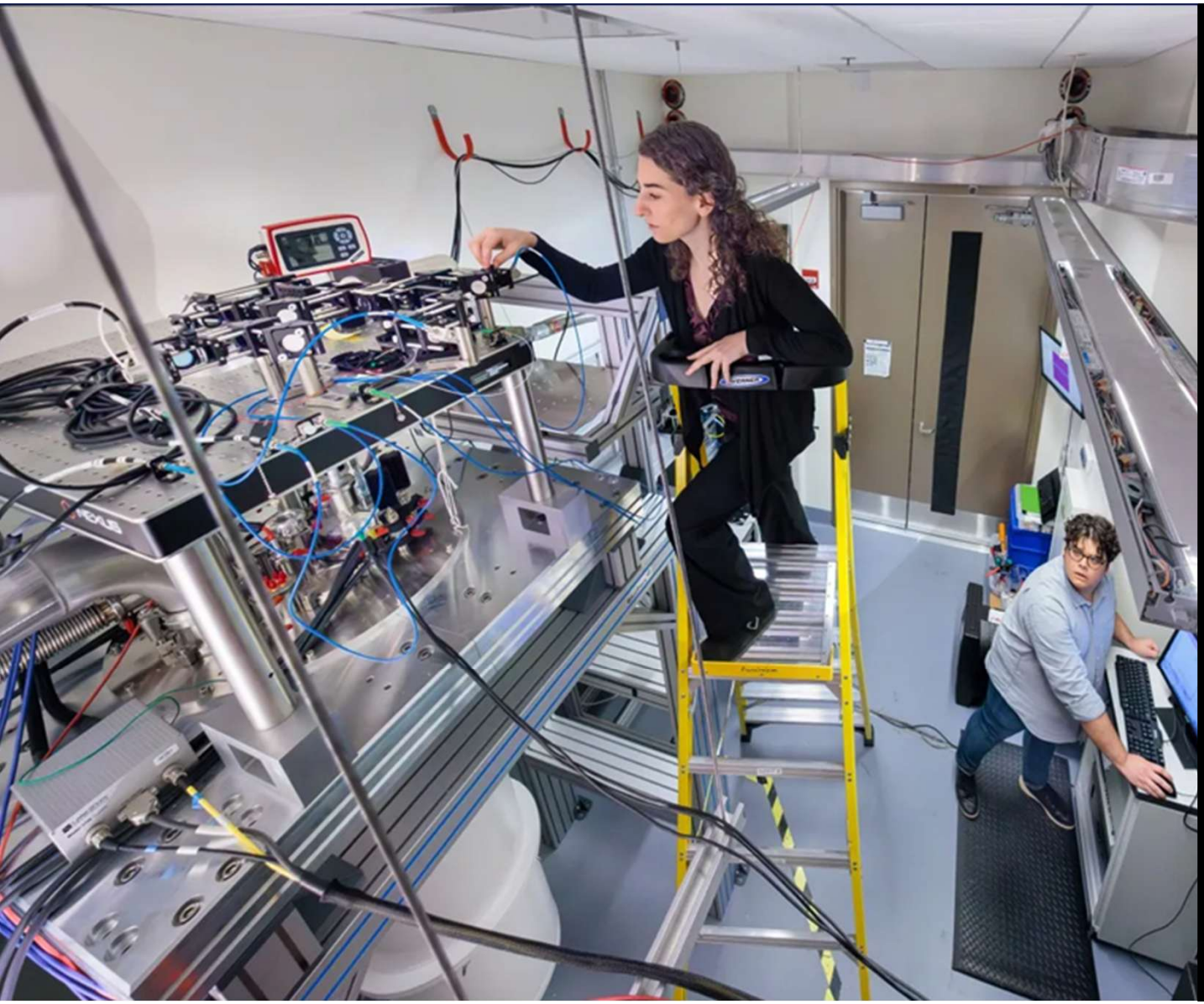
Electronic, Photonic, and Quantum Materials



Material Science



Other Research Areas: Proposed research in all areas of relevance to DoD will be considered(ex: aerodynamics, data science, etc.



Who are your Collaborators?

ACADEMIC COLLABORATOR OPTION 1 — VANNEVAR BUSH FACULTY FELLOWSHIP (VBFF)

VBFF is the Department of Defense's top award for individual researchers. It provides significant funding and freedom for bold, long-term basic research with potential national security applications.

Prestige & Selectivity

VBFF Fellow: Prof. Wolfgang Ketterle accepts a Nobel Laureate

Selection is highly competitive, places a researcher among the nation's most elite scientific minds

Award Structure

VBFF Fellow: Prof. Ana Maria Rey

Fellows receive up to $3M over five years for unrestricted, basic research at their home institution, fostering stable, exploratory, and high-risk science.

Integration with DoD

Fellows at a Bush Fellows Research Team Site Visit

Fellows regularly advise DoD scientists and leaders, translating basic discoveries into long-term defense roadmaps.

Value to LUCI

Partnering with a VBFF awardee gives LUCI access to transformative single-investigator leadership, co-developed research agendas, co-authored outputs, and enhanced student mentorship—boosting visibility across national security and global science networks.

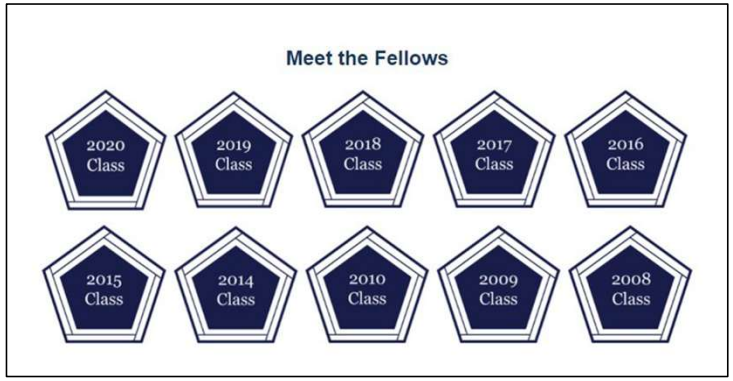
WHO ARE THE VBFF FELLOWS?

LIST VBFF OF FELLOWS

Web link:
https://basicresearch.defense.gov/Programs/Vannevar-Bush- Faculty-Fellowship/

Basic Research Website

Navigate to the programs the Vannevar Bush



ACADEMIC COLLABORATOR OPTION 2 — MULTIDISCIPLINARY UNIVERSITY RESEARCH INITIATIVE (MURI)

MURI is a prestigious program that funds team-based, interdisciplinary basic research targeted at high-priority scientific challenges relevant to long-term national security. It is designed to accelerate discoveries by combining complementary expertise across departments and institutions.

Team-Based Interdisciplinary Research

ONR MURI 2020: Science of Tracking, Control and Optimization of Information Latency for Dynamic Military IoT System

Combines multiple disciplines, such as materials science and computer science, to tackle problems too large for any one lab.

Award Scale & Duration

Large multi-year awards (~$1.25M–$1.5M per year for 3–5 years). The scale funds ambitious experiments, broader workforce development, and durable infrastructure commitments.

Cross-Institution Collaboration

This structure supports resource sharing, multi-site validation, and broader training opportunities for students and postdocs.

Value to LUCI

Partnering with a MURI PI links LUCI to a transformative PI connected to a multidisciplinary team—amplifying technical depth, enabling shared facilities, co-mentoring, and expanding the project's defense-relevant impact through scale and coordinated effort.

WHAT MATTERS MOST: ALIGNMENT & RELEVANCE

The optimal partnership provides clear scientific complementarity, tangible roles, and measurable contributions to Department of War basic research priorities.

Research Alignment

Does the collaborator's expertise strengthen LUCI's technical objectives? Seek demonstrable intellectual synergy, shared methods, and aligned milestones.

DoD Mission Relevance

Confirm that the research maps to DoD basic research priorities. Relevance improves review scores and strengthens pathways to downstream impact.

Authentic Collaboration

Prioritize partners with clearly defined roles, shared outputs (publications, data, trainees), and commitments to joint governance

Strategic Principle

The strongest LUCI proposals demonstrate scientific complementarity, authentic co-investment, clear deliverables, and strong relevance to DoD basic research. Choose the collaborator that best advances your research vision and augments its defense value.

JOIN THE DEFENSE BASIC RESEARCH EXCHANGE FORUM

Description: Bi-monthly webinars showcasing exceptional, DoD-relevant, academic research to provide valuable insights to DoD scientists, enabling them to explore potential academic collaborations.

Purpose: Potentially facilitate the transition from academia to the DoD, lead to collaborations and access to the DoD laboratories scientists and facilities and provide additional training opportunities for the DOD scientists and graduate students.

Time: Held virtually via ZOOM on Wednesdays at 12:00 PM EST

Sign-up: RunGrants

WHITE PAPER PACKAGE COMPONENTS

Component	Page Limit	Required Content
Cover Sheet	1 page	Submission title and organization(s).Proposer's technical and administrative points of contact (name, phone, email).University collaborators' details (institution, contact info, title/date of their VBFF or MURI project).
Technical Narrative	5 pages	Description of the basic scientific or technical research. Explanation of how the research leverages the collaborator's expertise for DoW missions. Outline of the technical approach. Note: Must be 11-point font minimum. References and graphics count towards the page limit.
Budget Section	1 page	An approximate annual budget.A high-level breakdown for personnel, travel, and materials/supplies.
Curriculum Vitae (CV)	4 pages per CV	A CV for the primary government PI and any co-PIs.
Supervisor's Letter of Support	No limit	A letter from the PI's (and any co-PI's) technical supervisor endorsing the research and explaining its potential impact.
Collaborator's Letter of Support	No limit	A letter from each university collaborator describing their commitment to the three-year collaboration.

Important: If any of these items are missing, the white paper will be considered ineligible and will not be reviewed.

HELPFUL HINTS AND TIPS

Prepare Strategically

- Review potential collaborators on the RUNGRANTS website
- Study the LUCI Proposer Guide carefully
- Align your idea with LUCI's goals and evaluation criteria

Seek Feedback Early

- Seek feedback from colleagues, mentors, previous winners, and institutional leadership
- Pressure-test your idea before submission

Demonstrate Clear Value Add

- Do not propose work that could have been done without LUCI funds
- Avoid projects that are simply continuations of a MURI
- Clearly articulate what LUCI uniquely enables (new collaboration, new direction, new capability)

LUCI PROPOSER'S GUIDE: STRONG VS WEAK WHITE PAPER

Strength	Weakness
Technical Merit: Transformative research, paradigm-shifting, high risk, and/or is addressing a research gap(s) that this missing for a very long time	**Technical Merit:** Evolutionary, incremental research, or research which could have been performed as part of the regular activities of the PI.
Proposal: Addresses fundamental research and is disruptive	**Proposal:** Geared mostly towards application(s)
Impact: Impact is revolutionary	**Impact:** Impact is incremental
Methodology: • Uses the most advanced methods, resulting in improved skills • Addresses the challenges that could arise during the research and mentions contingency plans• Outlines a logical, well-structured approach • Key steps are well described	**Methodology:** • The methodology described is conventional and/or incremental • All the tasks are critically dependent on the success of earlier ones • Confusing approach, missing key steps • No clear measures of success along the way
Clarity: Well written, free of grammatical errors	**Clarity:** Formatting errors, unexplained technical jargon, and incorrect/unexplained figures.
Budget: • Budget is briefly, but well justified • All costs expected from the narrative are included. • Leveraged funds (if applicable) are clearly listed and a letter of intent of support is included • Justification for the funding of Academic collaborator(s) and Lab partners	**Budget:** • Budget is not commensurate with the scope of the project • Needed travel is not included, or is excessive • Vague or missing reference of leveraged funds (if applicable)
Collaboration: Collaborators will bring interesting ideas and results to the research, but it is clear that the PI takes ownership and leadership of the proposal	**Collaboration:** The PI is very dependent on the collaborator in order for the research to be successful.
DoD Impact: DoD relevance is clear as well as the need and interest. The PI describes a how the academic collaborations will benefit DoD capabilities and workforce	**DoD Impact:** Even if the research is successful, the output has a questionable or undefined utility for the DoD, even in the long term.
Qualifications: PI is productive and considered a leader in her/his field	**Qualifications:** PI has never published or made any impact in the field of research he/she is proposing

LESS OBVIOUS PERKS OF BECOMING A LUCI FELLOW

Leadership & Influence Opportunities

LUCI Fellows sometimes influence the direction of DoW basic research priorities **Why this matters? Serving on** panels, reviewing program, or mentoring junior researchers gives you strategic insight on how DoW sets agenda increases career opportunities

High Visibility/Exposure

Present your research or drive research program like the DBRX. This mean your work is seen by key-decision makers and leaders in the field. ***Why this matters?*** This kind of exposure leads to more funding, collaborations, and recognition that accelerates you career

Integration with DoW Research Enterprise

LUCI immerses you in the DoW environment and helps connect you to academic innovation with national security laboratory priorities. ***Why this matters?*** LUCI fosters long-term relationship between labs and academia

Mentorship & Talent Pipeline

Working with academic collaborators gives PIs early access to highly skilled students and postdocs, which can become future employees or long-term partners. ***Why this matter?*** It's a way to train and recruit top talent while advancing research goals.

Being a LUCI PI is not just leading a project; it's a career accelerator for the lab itself. You get access to cutting-edge ideas, talent, visibility, and influence that can elevate your research in ways tradition lab work rarely does

RECENT LUCI ACCOMPLISHMENTS

Critical Technology Areas Impact

Alexander Efros | Advanced Materials – identified materials are now being synthesized as part of a US-NRL Nanoscience Institute program beginning in FY24

Laura M Hiatt | AI – 6.1 academic research (Brown University) transitioned technology on reinforcement learning to NRL scientists.

Marc Raphael | Biomanufacturing - "Developed live imaging products used for wound healing" and picked up by a company called Nanocrine, Inc

Dr. W. D. Mattson | Directed Energy- The outcome includes new machine learning algorithm for accelerated discovery of energetic materials as a thrust in the 6.2 ARAP project on Energetics.

Career Development

Bryn Adams | Developed science behind an ARAP

Dr. Nathaniel Bridges | Leading AFRL's Human Effectiveness Directorate

Dr. Dashiell L. P. Vitullo| Working with NIST in Chips office and in Quantum Communication (would not be possible w/o LUCI)

Dr. Charles Eddy | Leading AFRL's Human Effectiveness Directorate

Awards

Dr. Luke Baldwin & Dr. Chris Crouse | Scientific Achievement Award - the Directorate (best paper of 2023) *Most prestigious scientific excellence award of the year*

Dr. Nathaniel Bridges | Outstanding Technical Contribution in Government Award and BEYA (2024)

FY27 PROGRAM ANNOUNCEMENT & INFORMATION

Call For White Papers: https://dod-basicresearch.nvision.noblis.org/

Announcement: https://dod-basicresearch.nvision.noblis.org/resources/LUCI%20Announcement.pdf

Proposal Guidelines: https://dod-basicresearch.nvision.noblis.org/resources/LUCI%20Proposal%20Guidelines.pdf

IMPORTANT DATES FOR FY27 COMPETITION

Schedule of Events		
Event	Date	Time
Webinar	5 March 2026	1:00 PM ET
RunGrants site open for white papers and supporting documents submission	20 March 2026	
Final date/time for submission of white papers and supporting documents	1 May 2026	5:00 PM ET
Notification of white paper selections for interviews	26 June 2026*	
Interview period	17 - 21 August 2026*	
Notification of selections for award	28 August 2026*	

* Approximate dates

In Summary

Presenter Notes
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The LUCI is about….

Challenge

Dr. Janice Boercker (LUCI Fellow)

Exploration

Vision

You